NASA Glenn Technology Fact Sheet

Method For Ultraminiature Fiber Light Source

Miniature incandescent lamps of a special type have been invented to satisfy a need for compact, rapid-response, rugged, broadband, power- efficient, fiber-optic- coupled light sources for diverse purposes that could include calibrating spectrometers, interrogating optical sensors, spot illumination, and spot heating. A lamp of this type includes a re-entrant planar spiral filament mounted within a ceramic package heretofore normally used to house an integrated-circuit chip. The package is closed with a window heretofore normally used in ultraviolet illumination to erase volatile electronic memories. The size and shape of the filament and the proximity of the filament to the window are such that light emitted by the filament can be coupled efficiently to an optical fiber without intervening optics.

Benefits

- Produces less heat than state-of-the-art Tungsten halogen sources
- Low input electrical power
- Device can couple directly to an optical fiber and be used to optically power a wide range of fiber-optic sensors
- Lightweight
- Reliable
- Reduced stabilization time
- Stable spectral output

Applications

- Calibration source for spectrometers
- Light source for optical sensors

Patent

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